Quick Reference Guide

Circular A/V and DC Jacks for Mobile Devices

The Circular I/O connector is a reliable connector characterized by easy handling. There is no need to orientate the connector, as its circular shape naturally provides a blind mating capability. Circular I/O connectors are found in a large variety of mobile devices such as, mobile phones, media players, tablets, laptops and cameras. The connectors allow for video and audio transmission or supply DC power to the device. TE Connectivity offers several circular I/O connectors for A/V and DC applications in several mounting styles, depending on customers' needs. TE products meet our customers' requirements and offer the best solution for A/V and DC applications.

FEATURES

- A/V and DC connectors
- No plug orientation due to circular shape
- A/V connectors are equipped with plug detection switch
- SMD or compressive mounting style
- High reliability

BENEFITS

- Widespread market acceptance
- Low costs and easy application
- Easy handling for end customer and commonly-accepted connection

APPLICATIONS

- Mobile devices
- PCs and laptops
- Tablets
- Digital cameras and camcorders

te.com/industry/mobiledevices

SMD

The SMD style connector is soldered to the PWB in a common SMT soldering process / benefits of this product are:

- Low cost solution
- Suitable for standard pick and place / reflow soldering process
- Low height

The challenge in this solution is the risk of solder breakage especially during lateral forces; therefore a strong fixation to the PWB is necessary. TE has accommodated for large soldering areas in their products to accommodate for the higher forces.

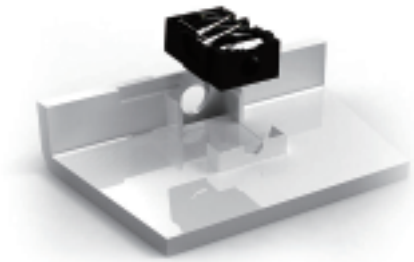
Compressive Style

The compressive style is a solderless connection, based on spring beams contacting the PWB. Benefits of this robust solution:

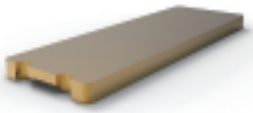
- No stress will be applied to PWB due to lack of soldering
- Compressive contacts allow for bigger tolerance stack-up in mechanical design
- Easy to repair, no soldering required.
- Possibility to assemble automatically by means of “grippers”

The challenge in this solution is the requirement for gold-plated solder pads on the PWB. Depending on the PWB quality, this can be solved by mounting gold-plated solder pads on the board, or by the gold plating already available on the PWB.

Integration of compressive style in the cover



Gold plated pad

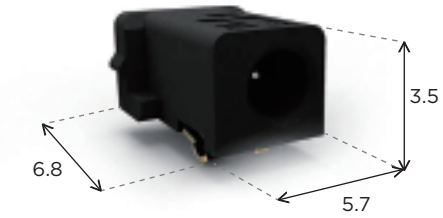


DC Connectors Compressive Style

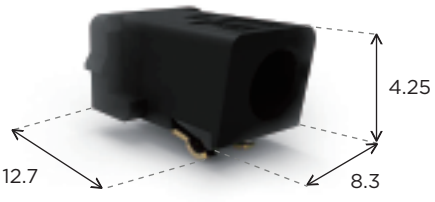
DC connectors are characterized by:

- Small size that allows easy integration
- Snap features to lock DC jack in the cover
- Double spring ground contact enhances plug force extraction
- Laser marking for identification purposes

2.0mm DC jack Compressive
1551548-1



2.0mm DC jack Compressive
Chamferred
1551657-1



Chamfered design (10°) matches with most phone designs

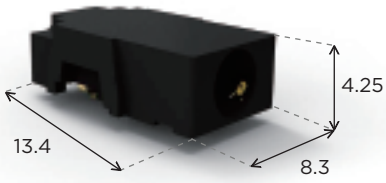
(Dimensions : mm)

A/V connectors compressive Style

Compressive A/V connectors provide a comprehensive set of features enabling competitive performance:

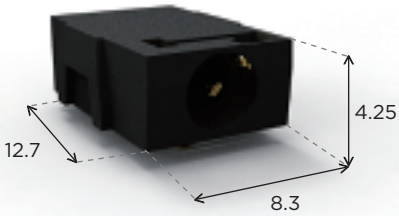
- Compressive style contacts reduce the risk of damage to the device under harsh conditions (vibration, shocks etc)
- Mechanical features help to integrate the connector in the device shell
- (Isolated) Switching present in order to perform plug detection
- First contact inside the housing reduces risk of damage
- Solid and rigid contact design for higher reliability; reduces field returns

3.5mm audio Jack compressive
P/N 1551768-1



(Dimensions : mm)

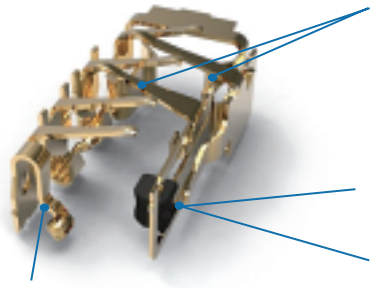
3.5mm audio jack compressive, isolated switch
P/N 2173014-1



Chamfered design (10˚) matches with most phone designs

Isolated Switch

Normally, switching is done over the plug or using a contact that is in contact with the plug. The isolated switch design features an electrically isolated switch. Therefore, this product can be used with both North American as well as European plugs in the same device.



Double LEFT contact provides increased unmating forces

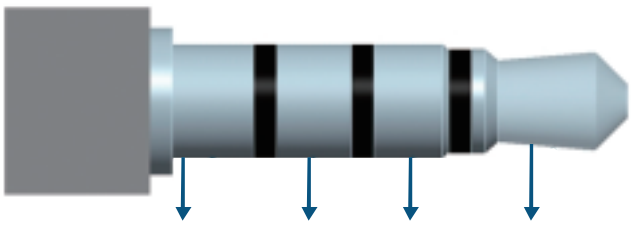
Switch contact design features wiping action to increase reliability of switch function

Over-mould on switch contact allows for remote switch location, preventing dust contamination

Solid and rigid contact design for higher reliability, reduces field returns

European vs. American Plug

Currently two major standards are available in the industry. Both feature a completely different pin assignment.



	1	2	3	4
European Plug	GND	MIC/VIDEO	RIGHT	LEFT
American Plug	MIC/VIDEO	GND	LEFT	RIGHT

European and American Pin assignment

Frequently asked questions

Question 1
How do compressive connectors hold in position?
Answer 1
In order to assemble a compressive connector, it is first inserted in a cavity in the phone cover. The compressive contacts are designed in such a way that they are compressed to the PCB board when the cover is assembled to the phone.

Question 2
Should I be using Pick and Place pads?
Answer 2
In case of non-gold-plated PCB pads on the board side, so-called pick and place pads can be used. These are tiny, square gold-plated pieces of sheet metal, which can be soldered to the board, and provide gold plating on the PCB board where it is required.

Question 3
Is the signal transmission in compressive style connectors reliable?
Answer 3
Compressive style connectors are as reliable as SMD type connections from a signal transmission point of view. The gold-plated interface provides a stable and reliable connection under all conditions. If you take the added robustness and eliminated risk of solder joint breakage into consideration, compressive style connectors are more reliable than SMD connectors. This is due to the fact that these connectors do not require soldering. During large shocks (which typically cause solder joint breakage in SMD connectors), the compressive style connector contact allows movement to accommodate for the shock and quickly returns back in its old position without any damage to the connector or the PCB.

Question 4
Are the shapes of the connectors adaptable to my needs?
Answer 4
In many of our circular connectors we have designed a chamfer in order to accommodate for the design of the device. Typically our products are used on the edge of the device. Deviating geometries can be studied upon request.

Question 5
Is pick and place possible for compressive connectors?
Answer 5
Our compressive connectors are supplied in embossed tape according to EIA specifications. This allows for robot assembly of the connectors in the covers.

Question 6
What are the advantages of the isolated switch?
Answer 6
Typically, switching is performed using two contacts on the ground ring of the plug. By detecting the “shortcutting” of these contacts when the plug is inserted, the device can detect that the plug is inserted. However, currently there are two kinds of plugs in the market. The position of the ground ring differs in these two versions. In order to be able to provide plug detection, the switch has to be electrically isolated from the plug. This is called an isolated switch. The benefit of the isolated switch is that it can safely detect the plug independent of the position of the ground ring.

FOR MORE INFOMATION

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